

Office Action Summary

Application No.

09/631,126

Applicant(s)

FUJIMOTO, MAKOTO

Examiner

Heather D Gibbs

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 August 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-22 is/are allowed.
- 6) ☒ Claim(s) 1, 10-12, 15, 16, 23, 26-29, 31, 32, 35-39 and 42-45 is/are rejected.
- 7) ☒ Claim(s) 2-9, 13-14, 24, 25, 30, 33, 34, 40, 41 and 46 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,26,42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (US 5,557,446).

Regarding claim 1, Kato teaches of a light-scanning optical apparatus comprising: an incidence optical system adapted to cause a light beam emitted from a light source to strike a deflection plane of an optical deflector with a predetermined angle in the sub-scanning section (Col 4 Lines 3-15); and a focusing optical system for focusing the light beam reflected by the deflection plane of the optical deflector on a surface to be scanned (Col 3 Lines 59-67); said focusing optical system including an f θ lens system having a spherical lens a first cylindrical lens showing power in the main-scanning direction and an optical system showing power in the sub-scanning direction (Col 4 Lines 44-47).

Kato does not specifically teach wherein said spherical lens and said first cylindrical lens also constituting part of said incidence optical system.

However, Kato indirectly implies that the spherical lens and first cylindrical lens also constituting part of said incidence optical system (Col 3 Lines 54-58 and Col 7 Lines 6-13).

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At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the cylindrical lens and the spherical lens in the incidence optical system as Kato teaches how the optical scanning apparatus can be installed in a body of laser beam printer and hence would incorporate both spherical and cylindrical lens in an incidence optical system.

Considering claims 26 and 42, Kato teaches of the image optical scanning apparatus as discussed in claim 23, but fails to particularly point out wherein said spherical lens and said first cylindrical lens also constitute part of said incidence optical system.

However, Kato indirectly implies that the spherical lens and first cylindrical lens also constituting part of said incidence optical system (Col 3 Lines 54-58 and Col 7 Lines 6-13). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the cylindrical lens and the spherical lens in the incidence optical system as Kato teaches how the optical scanning apparatus can be installed in a body of laser beam printer and hence would incorporate both spherical and cylindrical lens in an incidence optical system.

3. Claims 10, 12, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (US 5,557,446) in view of Noguchi (US 4,694,164).

Regarding claim 10, Kato teaches of the image scanning optical apparatus as discussed above in claim 1, but fails to particularly point out wherein said optical system showing power in the sub-scanning direction has a second cylindrical lens; and the light beam as image height=0 is made to pass through a position off the optical axis of the second cylindrical lens in the sub-scanning section.

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Noguchi teaches of a light beam scanning apparatus that has a position detecting light beam 11 that passes through the grating pattern 16 then is converged on a light beam detector 20 by a second converging optical system 19 (Col 3 Lines 45-57).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Kato's image scanning optical apparatus with the light beam apparatus of Noguchi. Kato's optical apparatus would easily be modified to include Naguchi's second converging optical system as both systems share cumulative features making them additive in nature.

Considering claim 12, Kato teaches wherein the perpendicular to the deflection plane at image height=0, the optical axis of the spherical lens and that of the first cylindrical lens are parallel with each other in the sub-scanning section (Col 3 Lines 53-66).

Regarding claims 15-16, Kato teaches wherein the light beam emitted from the light source strikes the deflection plane of the optical deflector with a width broader (substantially along the center line of the deflection angle) than that of the deflection plane in the main-scanning direction (Col 4 Lines 3-14).

4. Claims 29,45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (US 5,557,446) and Yoshikawa et al (US 5,089,907).

Kato teaches of the image scanning optical apparatus as discussed above in any of claims 1-28, but fail to particularly teach a photosensitive member arranged on said surface to be scanned; a developing unit for developing an electrostatic latent image formed on said photosensitive member by a light beam caused to scan by said light-scanning optical apparatus into a toner image; a transfer unit for transferring said developed toner image

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onto a toner image receiving member; and a fixing unit for fixing the transferred toner image on the toner image receiving member.

Yoshikawa teaches a photosensitive member 31 arranged on said surface to be scanned; a developing unit 32 for developing an electrostatic latent image formed on said photosensitive member by a light beam caused to scan by said light-scanning optical apparatus into a toner image; a transfer unit 35 for transferring said developed toner image onto a toner image receiving member; and a fixing unit 37 for fixing the transferred toner image on the toner image receiving member (Col 5 Lines 27-46).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Kato's image optical apparatus with the image forming system of Yoshikawa. Kato's optical apparatus would easily be modified to include Yoshikawa's image forming system as both systems share cumulative features, making them additive in nature.

5. Claims 31-32,35-37,39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (US 5,557,446) in view of Oda et al (US 4,731,623).

Regarding claim 31, Kato teaches of a light-scanning optical apparatus comprising: an incidence optical system adapted to cause a light beam emitted from a light source to strike a deflection plane of an optical deflector with a predetermined angle in the sub-scanning section (Col 4 Lines 3-15); and a focusing optical system for focusing the light beam reflected by the deflection plane of the optical deflector on a surface to be scanned (Col 3 Lines 59-67); said focusing optical system including an f θ lens system having a spherical lens a first cylindrical lens showing power in the main-scanning direction and an optical system showing power in the sub-scanning direction (Col 4 Lines 44-47).

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Kato does not expressly teach wherein said lens showing power both in the main-scanning direction and in the sub-scanning direction and said first cylindrical lens also constituting part of said incidence optical system.

Oda teaches wherein said lens showing power both in the main-scanning direction and in the sub-scanning direction and said first cylindrical lens also constituting part of said incidence optical system (Col 16 Lines 49-66).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Oda's lens in the image optical apparatus of Kato. Kato's image optical scanning apparatus would easily be modified to include the lens of Oda as both systems share cumulative features, making them additive in nature.

Considering claim 32, Kato and Oda teach of the image scanning apparatus as discussed above in claim 31, but fails to particularly teach wherein said lens showing power both in the main-scanning direction and in the sub-scanning direction is a spherical lens.

Oda further teaches wherein the lines in noncylindrical and hence can be implied that the lens showing power both in the main scanning direction and in the sub-scanning direction is a spherical lens (Col 17 Lines 53-63).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize the noncylindrical lens in the system of Kato and Oda to facilitate the finishing of the image formation device, as taught by Oda et al.

Regarding claim 35, Kato and Oda teach of the scanning apparatus as discussed above in claim 31, but fail to particularly point out wherein the light beam emitted from the light source strikes the deflection plane of the optical deflector substantially along the center of the deflection angle of the optical deflector.

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Kato teaches the light beam emitted from the light source strikes the deflection plane of the optical deflector substantially along the center of the deflection angle of the optical deflector (Fig 7).

Regarding claim 36, Kato teaches the light beam emitted from the light source being made to strike the deflection plane of said optical deflector with a width broader than that of the deflection plane in the main-scanning direction (Fig 7).

Considering claim 37, Kato teaches wherein said optical system showing power in the sub-scanning direction has a second cylindrical lens showing power in the sub-scanning direction (Col 7 Lines 6-13).

Considering claim 39, Kato and Oda teach of the image scanning apparatus as discussed in claim 38, but fail to particularly point out wherein said lens showing power both in the main-scanning direction and in the sub-scanning direction is a spherical lens.

the lines in noncylindrical and hence can be implied that the lens showing power both in the main scanning direction and in the sub-scanning direction is a spherical lens (Col 17 Lines 53-63).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to utilize the noncylindrical lens in the system of Kato and Oda to facilitate the finishing of the image formation device, as taught by Oda et al.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 23, 27-28, 38, 43-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Kato (US 5,557,446).

Considering claim 23, Kato teaches of a light-scanning optical apparatus comprising: an incidence optical system adapted to cause a light beam emitted from a light source to strike a deflection plane of an optical deflector with a predetermined angle in the sub-scanning section (Col 4 Lines 3-15); and a focusing optical system for focusing the light beam reflected by the deflection plane of the optical deflector on a surface to be scanned (Col 3 Lines 59-67); said focusing optical system including an f θ lens system having a spherical lens a first cylindrical lens showing power in the main-scanning direction and an optical system showing power in the sub-scanning direction (Col 4 Lines 44-47); the light beam emitted from the light source being made to strike the deflection plane of said optical deflector with a width broader than that of the deflection plane in the main-scanning direction (Fig 7).

Regarding claim 27, Kato teaches wherein the light beam emitted from the light source strikes the deflection plane of the optical deflector substantially along the center of the deflection angle of the optical deflector (Fig 7).

Considering claim 28, Kato teaches wherein said optical system showing power in the sub-scanning direction has a second cylindrical lens showing power in the sub-scanning direction (Col 7 Lines 6-13).

Considering claim 38, Kato teaches of a light-scanning optical apparatus comprising: an incidence optical system adapted to cause a light beam emitted from a light source to

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strike a deflection plane of an optical deflector with a predetermined angle in the sub-scanning section (Col 4 Lines 3-15); and a focusing optical system for focusing the light beam reflected by the deflection plane of the optical deflector on a surface to be scanned (Col 3 Lines 59-67); said focusing optical system including an f θ lens system having a spherical lens a first cylindrical lens showing power in the main-scanning direction and an optical system showing power in the sub-scanning direction (Col 4 Lines 44-47); the light beam emitted from the light source being made to strike the deflection plane of said optical deflector with a width broader than that of the deflection plane in the main-scanning direction (Fig 7).

Regarding claim 43, Kato teaches the light beam emitted from the light source strikes the deflection plane of the optical deflector substantially along the center of the deflection angle of the optical deflector (Fig 7).

Regarding claim 44, Kato teaches wherein said optical system showing power in the sub-scanning direction has a second cylindrical lens showing power in the sub-scanning direction (Col 7 Lines 6-13).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 10-11, 30, 45-46 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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10. In the present instance, claim 1 recites the recitation of an incidence optical system and a focusing optical system, and the claims 10-11 also recites an optical system, which is the narrower statement of the range/limitation. However, it is unclear as to which optical system (incidence optical system or focusing optical system) the Applicant is referring to. For rejection purposes. Examiner assumes applicant is referring to said focusing optical system.

Allowable Subject Matter

11. Claims 2-9,13-14,24-25, 33-34,40-41, are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. Claims 17-22 are allowed.

13. The following is a statement of reasons for the indication of allowable subject matter: Examiner found neither prior art cited in its entirety, nor based on the prior art, found any motivation to combine any of said prior art which teaches a light-scanning optical apparatus comprising: an incidence optical system; a focusing optical system including a $f\theta$ lens system having a spherical lens and a first cylindrical lens showing power in the main scanning direction and focusing optical system satisfying the requirement of conditional formulas as specified in the claim 17, respectively, including all of the features recited therein.


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Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather D Gibbs whose telephone number is 703-306-4152. The examiner can normally be reached on M-F 8AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward L. Coles can be reached on 703-305-4712. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.


Heather D Gibbs
Examiner
Art Unit 2622

hdg


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